## REMARKS

Claims 1-2 and 5-19 are pending. Claims 7-9 and 12-17 have been withdrawn from consideration by the Examiner for being drawn to a non-elected invention. By this Amendment, Claim 1 is slightly amended herein to more clearly recite the structural characteristic of the thermoplastic polyimide-based adhesive film between the first insulation layer and the aluminum alloy metal substrate. Applicants respectfully submit no new material is presented herein.

**Entry of Response Proper**

Entry of this Amendment is proper under 37 C.F.R. §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issues requiring further search and/or consideration on the part of the Examiner as Claim 1 is amended herein to more clearly recite the structural characteristic of the thermoplastic polyimide-based adhesive layer that provides adhesion between the first insulation layer and the aluminum alloy metal substrate recited therein, a feature previously considered by the Examiner; (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The Amendment is necessary and was not earlier presented because it is made in response to objections raised in the Final Rejection. Entry of the Amendment is thus respectfully requested.

**Affidavit**

Applicants submitted a Declaration on October 18, 2005, averring to the results of experiments conducted by a Declarant who had investigated the advantages obtained by using a thermoplastic polyimide film in which bonding is possible at low temperatures in the process of manufacturing an electrostatic chucking device. During the experiment, the low temperature thermoplastic polyimide film of the present invention was compared with the thermoplastic polyimide film taught by U.S. Patent Number 5,691,876 to Chen et al. The Declaration was filed to further support the arguments presented in previously submitted Responses that the invention recited by the pending claims are patentable over the teachings of Chen et al.

However, the instant Office Action stated that "[t]he Affidavit filed on 10/18/2005 presents Examples of Espanex to illustrate the difference between Espanex and the thermoplastic polyimide Kapton used in Chen '876. However, since Espanex is a specific polyimide, the data presented in the Affidavit is not commensurate with the scope of the claims."

Applicants respectfully submit the data presented in the Affidavit is commensurate with the scope of the claims.

In particular, Applicants note Claim 1 recites an electrostatic chucking device having, among other features, a thermoplastic polyimide-based adhesive film that performs an adhesion, i.e., sealingly joins, an aluminum alloy metal substrate and a first insulation layer, the adhesive film having a thickness of 5 to 50 μm and is capable of withstanding low-temperature compression bonding at a temperature of 100 to 250°C.

Moreover, paragraph [0022] of the originally filed application states:

> [0022] As the thermoplastic polyimide-based adhesive film which is served for this purpose, any film can be used so long as the film provides the excellent adhesive strength and, at the same time, exhibits the excellent heat resistance, the excellent electric characteristics (particularly, insulation characteristics), the excellent chemical resistance and the low thermal expansion characteristics. Although no other particular limitation is made with respect to the use of the adhesive film, ***it is preferable to use the adhesive film which can be subjected to the low temperature compression bonding processing under pressure at a heating temperature of 100 to 250° C.***, and preferably at a heating temperature of 100 to 200°C. Particularly, when the metal substrate is made of the aluminum substrate, it is preferable to use the adhesive film which can be subjected to the low temperature compression bonding processing under pressure at a heating temperature of 100 to 120°C. When the heating temperature at the time of performing the compression bonding processing under pressure is lower than 100°C., the adhesive strength may become insufficient. To the contrary, when the heating temperature at the time of performing the compression bonding processing under pressure is higher than 250°C., particularly in the case that the metal substrate is made of the aluminum substrate, large cracks occur in the alumite film thus giving rise to a practically serious problem. ***As an specific example of such a thermoplastic polyimide-based adhesion film, for example, ESPANEX (name of product of Shinnittetsu Kagaku Ltd.) can be named.*** This film is a siloxane modified thermoplastic polyimide-based adhesive film which is obtained by a chemical reaction among diamino siloxane, aromatic diamine and tetracarboxylic acid di-anhydrides (Japanese Laid-open Patent Publication 212468/1998).

Accordingly, Applicants respectfully submit that the use of Espanex to compile the data upon which the Declarant based the Affidavit is commensurate with the scope of the claims and further supports the arguments made to date with regards to the present invention being patentable over Chen '876. As such, Applicants respectfully request the data presented in the Affidavit be fully considered when reconsidering the patentability of the invention recited by Claim 1.

**Structural vs. Functional Features**

The Office Action appears to attempt to articulate the well known axiom that claims directed to an apparatus must structurally distinguish the claimed invention over the prior art rather than functionally. M.P.E.P. §2114. Applicants note Claim 1 recites the thermoplastic polyimide-based adhesive layer is 5 to 50 μm thick and, based on the language recited therein, must be capable of withstanding low-temperature compression bonding at a temperature of 100 to 250°C. The ability of the adhesive layer to withstand compression bonding at a particular temperature range is not a functional feature or even a procedural/method step feature, rather, the recited feature is an expressly stated structural characteristic of the adhesive layer. Applicants respectfully submit that with respect to the adhesive layer recited in Claim 1, the feature further clarifies what the electrostatic chucking device ***is***, rather than what the device ***does***. See *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Therefore, Applicants respectfully submit the language pertaining to the characteristics of the thermoplastic polyimide-base adhesive layer recited by Claim 1 be given full weight when considering patentability of the chucking device recited therein.

**Claims 1-2, 5-6, 10-11 and 18-19 Recite Patentable Subject Matter**

Claims 1-2, 5-6, and 18-19 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,691,876 to Chen et al. (Chen). Claims 10-11 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chen. Applicants respectfully traverse both rejections.

Claim 1 recites an electrostatic chucking device having a laminated structure which is formed by sequentially laminating a first insulation layer, an electrode layer and a second insulation layer on an aluminum alloy metal substrate, wherein the first insulation layer and the second insulation layer are constituted of polyimide films, and at least an adhesion between the aluminum alloy metal substrate and the first insulation layer is performed by using ***a thermoplastic polyimide-based adhesive film having a film thickness of 5 to 50 μm and capable of withstanding low-temperature compression bonding at a temperature of 100 to 250°C***.

Chen fails to teach or suggest each and every one of the features recited by Claim 1.

Applicants note the Office Action asserts Chen teaches

> an electrostatic chucking device having a laminate structure; wherein the laminate comprises in sequence of a substrate 110, a first polymeric dielectric layer 124, a conductive layer 122 (electrode layer), and a second polymeric dielectric layer 114 (see abstract; Fig. 1; col. 6, ln. 35-43). The dielectric layer 124 comprises a non-thermoplastic polyimide core layer, and two thermoplastic polyimide adhesive layers to adhere the dielectric layer to the substrate and the conductive layer. The dielectric layer 114 comprises a non-thermoplastic polyimide layer and a thermoplastic polyimide adhesive layer adhering to the conductive layer (see paragraph bridging col. 7-8; col. 9, ln.38-67; col. 10, ln. 1-5). The thermoplastic polyimide adhesive layer can be 38.1microns in thickness (see col. 9, ln. 38-40, 65-67), which reads on the instantly claimed ranges. The substrate is made of aluminum alloy (see col. 5, ln. 31-32).

Applicants note Figures 1-3 of Chen relate to a first embodiment, in particular, a support structure 110 with an electrostatic chuck 112 attached thereto; Figures 4-5 of Chen relate to a second embodiment illustrating a high temperature electrical connection; and Figure 6 of Chen relates to a high temperature electrical connection. The embodiments illustrated in Figures 1-3 are different from the embodiments in

Figures 4-5 and Figure 6. Applicants respectfully submit that not one embodiment disclosed by Chen discloses or teaches each and every feature recited by Claim 1. Because Chen fails to disclose or suggest each and every feature recited by Claim 1 in a single embodiment, the Office Action has had to pick, choose and combine various portions of the Chen disclosure not directly related to each other to justify the rejections therein.

For example, as noted above, the Office Action starts off by noting that Figure 1 and the discussion relating thereto in column 6, lines 35-43 of Chen disclose an aluminum alloy substrate 110, a first polymeric dielectric layer 124, a conductive layer 122 (electrode layer), and a second polymeric dielectric layer 114. However, as made clear in column 6, lines 54 to 62, Chen notes the first polymeric dielectric layer 124 was previously adhered to the substrate 110 by using a methyl methacrylate (acrylic) based adhesive layer, however, such adhesive layers cannot withstand temperatures about 175°C. To avoid using such acrylic adhesive, Chen then notes a newly-developed polyimide film that is sufficiently thermoplastic enough that it can flow and bond to the substrate 110 underneath. In other words, Chen expressly states the newly-developed polyimide film does away with the need of an adhesive layer between the film 124 and substrate 110 given the properties of the newly-developed polyimide film. Chen then points out the preferred material for use as the polyimide film 124 is Kapton. The paragraph bridging columns 6-7 of Chen verify that Kapton is an adhesive film that accomplishes bonding above 280°C.

Column 7, line 27 to column 8, line 39 of Chen then discussed the use of polyimide cladply materials having a non-thermoplastic core layer in the center with a

thermoplastic adhering layer on each side and a copper layer deposited on the surface of each thermoplastic adhering layer, wherein one of the copper surface layers is then patterned to produce the desired conductive pattern. The resulting structural arrangement of such a modified electrostatic chuck would be a conductive layer (electrode later) 122 having the modified cladply material between the conductive layer 122 and the substrate 110 wherein a copper surface of the cladply material contacts the conductive layer 122, a thermoplastic adhesive layer between the copper surface (upper) and the non-thermoplastic core, another copper surface (lower) with another thermoplastic adhesive layer between the non-thermoplastic core and the copper surface (lower), and wherein the copper surface (lower) contacts the substrate 110.

The embodiment or modified electrostatic chuck discussed at column 7, line 27 to column 8, line 39 does not disclose or suggest an electrostatic chucking device having a laminated structure which is formed by sequentially laminating a first insulation layer, an electrode layer and a second insulation layer on an aluminum alloy metal substrate, wherein the first insulation layer and the second insulation layer are constituted of polyimide films, and at least an adhesion between the aluminum alloy metal substrate and the first insulation layer is performed by using ***a thermoplastic polyimide-based adhesive film having a film thickness of 5 to 50 μm and capable of withstanding low-temperature compression bonding at a temperature of 100 to 250°C***.

With regards to the embodiment illustrated in Figure 6 and discussed at column 8, line 46+ also fails to disclose or suggest an electrostatic chucking device having a laminated structure which is formed by sequentially laminating a first insulation layer, an

electrode layer and a second insulation layer on an aluminum alloy metal substrate, wherein the first insulation layer and the second insulation layer are constituted of polyimide films, and at least an adhesion between the aluminum alloy metal substrate and the first insulation layer is performed by using ***a thermoplastic polyimide-based adhesive film having a film thickness of 5 to 50 μm and capable of withstanding low-temperature compression bonding at a temperature of 100 to 250°C***.

Applicants note Figure 6 expressly teaches a steel substrate 614 having a first thermoplastic polyimide film 616 placed thereon. The first thermoplastic polyimide film 616 comprises a bottom thermoplastic polyimide layer and a top non-thermoplastic core layer. Moreover, a thin layer of chromium 619 is then sputtered onto the top surface of the first thermoplastic polyimide film 616. Although a thickness range of the first thermoplastic polyimide film 616 is provided therein and appears to coincide with the thickness range recited by Claim 1, Applicants note the thickness range recited in Claim 1 is for the adhesive film which bonds the first insulation layer to the substrate and not the thickness of the first insulation layer, which appears to correspond to the first thermoplastic polyimide film 616 discussed therein.

Moreover, Applicants note that column 5, lines 31-32 of Chen states that thin films of various metals, such as aluminum, aluminum alloys, refractory metal silicides, etc, can be deposited onto an item (e.g., a substrate). In other words, Chen teaches metal films can be deposited onto a substrate. Chen does not appear to teach the substrate itself is formed from metal, let alone an aluminum alloy.

In view of the above, Applicants respectfully submit Chen also fails to teach or suggest an electrostatic chucking device having a laminated structure which is formed

by sequentially laminating a first insulation layer, an electrode layer and a second insulation layer on an aluminum alloy metal substrate, wherein the first insulation layer and the second insulation layer are constituted of polyimide films, and at least an adhesion between the aluminum alloy metal substrate and the first insulation layer is performed by using ***a thermoplastic polyimide-based adhesive film having a film thickness of 5 to 50 μm and capable of withstanding low-temperature compression bonding at a temperature of 100 to 250°C***. To justify the anticipatory rejection of Claim 1 under 35 U.S.C. §102, the Office Action has selected certain features of various embodiments of the electrostatic chuck taught by Chen. Applicants respectfully submit a rejection presented on such a basis is improper. Specifically, "[i]t is well settled . . . that anticipation is not established if in reading a claim on something disclosed in a reference it is necessary to pick, choose and combine various portions of the disclosure not directly related to each other by the teachings of the reference. See *In re Arkley*, 455 F.2d 586, 587-588, 172 USPQ 524, 526 (CCPA 1972), the rule of which was recently restated by the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences in (Unpublished) *Ex parte Beuther*, 71 USPQ2d 1313, 1316 (Bd. Pat. App. & Int. 2003).

In order for Chen to anticipate or even render obvious the invention recited by Claim 1, Applicants respectfully submit that Chen must disclose or suggest an electrostatic chucking device having a laminated structure which is formed by sequentially laminating a first insulation layer, an electrode layer and a second insulation layer on an aluminum alloy metal substrate, wherein the first insulation layer and the second insulation layer are constituted of polyimide films, and at least an

adhesion between the aluminum alloy metal substrate and the first insulation layer is performed by using a thermoplastic polyimide-based adhesive film having a film thickness of 5 to 50 μm and capable of withstanding low-temperature compression bonding at a temperature of 100 to 250°C.

As is clear from the above discussion, not one embodiment of Chen teaches or suggests each and every one of the features recited by Claim 1. Applicants respectfully submit that not one of the embodiments taught by Chen provides a thermoplastic polyimide based adhesive layer adhering an aluminum alloy metal substrate and a first insulation layer wherein the adhesive layer has the given properties recited by Claim 1. Chen teaches directly adhering a first polyimide film to the substrate, or providing a cladply type material which has an adhesive component, but where there is a copper layer between the adhesive component and the substrate such that the copper surface joins the cladply material to the substrate, or a two layer polyimide film having a non-thermoplastic layer and a thermoplastic layer, but with no adhesive layer between the two layer polyimide film and the substrate.

In view of the above, Applicants respectfully submit that Chen fails to disclose or suggest each and every feature recited by Claim 1.

To qualify as prior art, a single reference must teach, i.e., identically disclose, each and every feature recited by a rejected claim. Furthermore, to establish prima facie obviousness, each feature of a rejected claim must be taught or suggested by the applied art of record. See M.P.E.P. §2143.03. As explained above, Chen does not disclose or suggest each feature recited by Claim 1. Therefore, Chen does not

anticipate, nor render obvious, the invention recited by Claim 1. Accordingly, Applicants respectfully submit Claim 1 should be deemed allowable over Chen.

Claims 2, 5-6, 10-11 and 18-19 depend, directly or indirectly, from Claim 1. It is respectfully submitted that these dependent claims be deemed allowable for at least the same reasons Claim 1 is allowable, as well as for the additional features recited therein.

Applicants respectfully request withdrawal of the rejections.

**Conclusion**

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of Claims 1-2, 5-6, 10-11 and 18-19, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event that the filing of this paper is not deemed timely, Applicants petition for an appropriate extension of time. Any petition fee for the extension of time and any other fees that may be required in relation to this paper can be charged to Deposit Account No. 01-2300, **referencing Docket No. 101160-00026**.

Respectfully submitted,

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Enclosure: Petition for Extension of Time (1 month)

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